

B<sup>2</sup> differential amplifier 481 will show the difference. In principle, i.e., other than for noise etc, differential amplifier output 482 tracks the reflection components, the transmitted output signal having effectively been removed.

Page 13, first full paragraph (lines 6-15)

B<sup>3</sup> Figure 5 shows three-level output data pulse generation for preferred three-level signalling, see fixed clock 51, phase-lock loop 52, selective divider 53, specific divide-by-3 dividers 54A to the phase lock loop 52 and 54B to bit signal format time setting 55, coincidence gate 56 for coordinating bit excursions (X,Y) with input binary data values and controlling production at 57 of positive and negative voltages applied to biased base of output transistor 58 through switch 59 controlled by output from time setting 55 to be turned off during the interval (Z) following the bit value representing bipolar excursions (X,Y).

Page 19, after the last paragraph, please add the following new paragraph:

B<sup>4</sup> Figure 8 shows transformers using coaxial or twisted pair cable, and Figure 9 shows a transmission line transformer.

**IN THE CLAIMS:**

Please cancel claims 1-50 without prejudice or disclaimer.

Please add the following new claims 55-186 to the remaining claims 51-54. All of the pending claims are reproduced below as a consolidated clean set.

51. Method of signalling wherein transmitting means sends signals and receiving means sends signals and receives meaningful signals resulting from selective deliberate reflection of the transmitted signals, wherein serial meaningful components of said resulting signals have different meanings according to which of different deliberate reflections is selected for and applied individually to serial meaningful components of said transmitted signals, and selection between said deliberate reflections is made individually for each said component.

52. Method of binary signalling wherein signal formats for different binary values each have two consecutively oppositely directed voltage excursions and an associated following component different from the excursions to serve in signal processing of those preceding associate excursions.

53. Method of binary signalling wherein signal formats for different binary values each have two consecutively opposite voltage excursions, wherein a following component different from said excursions is associated with a group of successive binary values to serve for signal processing of the corresponding preceding group of signals.

54. Method of binary signalling according to claim 52, wherein the two consecutively oppositely directed voltage excursion are substantially as successive half-cycles of a sinusoidal wave-form, and the following component is at a substantially constant voltage level substantially central of the complete sinusoidal waveform of said consecutive sinusoidal wave-forms.

55. (New) A method of signalling between first and second equipments, the method comprising the steps of:

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- (a) transmitting a signal from said first equipment to said second equipment;
  - (b) reflecting said signal back to said first equipment in a manner corresponding to a first bit sequence;
  - (c) receiving the signal thus reflected at said first equipment; and
  - (d) comparing said signal thus reflected with said transmitted signal to thereby extract said first bit sequence.

56. (New) The method of signalling according to claim 55, the method comprising the steps of transmitting a signal corresponding to a second bit sequence from said first equipment to said second equipment, and extracting said second bit sequence from said signal at said second equipment

57. (New) The method according to claim 55, and comprising the step of checking at said first equipment said signal thus reflected.

58. (New) The method according to claim 55, the method comprising the step of reflecting said signal back to said first equipment in phase with said signal.

59. (New) The method according to claim 55, the method comprising the step of reflecting said signal back to said first equipment out of phase with said signal.

60. (New) The method according to claim 55, and wherein said first and second equipments are linked by a transmission line having a reflective termination at said second equipment, the method comprising the step of varying the reflective property of said termination in a manner corresponding to said first bit sequence.

61. (New) The method according to claim 60, and comprising the step of varying the reflective property of said termination between open-circuit and short-circuit conditions in a manner corresponding to said first bit sequence;

62. (New) The method according to claim 56, and wherein said first and second equipments are linked by a transmission line, the step of transmitting a signal corresponding to a second bit sequence from said first equipment to said second equipment comprising the application of successive oppositely-directed voltage excursions to said transmission line.

63. (New) The method according to claim 62, and comprising the step of varying the phase of successive oppositely-directed voltage excursions in dependence on said second bit sequence.

64. (New) The method according to claim 62, wherein all of the excursions are to substantially the same extent.

65. (New) The method according to claim 63, wherein all of the excursions are to substantially the same extent.

66. (New) The method according to claim 62, wherein said oppositely-directed voltage excursions are of opposite polarity.

B5 67. (New) The method according to claim 63, wherein said oppositely-directed voltage excursions are of opposite polarity.

68. (New) The method according to claim 64, wherein said oppositely-directed voltage excursions are of opposite polarity.

69. (New) The method according to claim 66, wherein said oppositely-directed voltage excursions are symmetrical about nominally zero volts.

70. (New) The method according to claim 62, the method comprising the step of applying a further voltage component in association with said oppositely-directed voltage excursions.


71. (New) The method according to claim 63, the method comprising the step of applying a further voltage component in association with said oppositely-directed voltage excursions.

72. (New) The method according to claim 64, the method comprising the step of applying a further voltage component in association with said oppositely-directed voltage excursions.

73. (New) The method according to claim 66, the method comprising the step of applying a further voltage component in association with said oppositely-directed voltage excursions.

74. (New) The method according to claim 69, the method comprising the step of applying a further voltage component in association with said oppositely-directed voltage excursions.

75. (New) The method according to claim 62, the method comprising the step of applying a further voltage component in association with a plurality of said oppositely-directed voltage excursions.

 76. (New) The method according to claim 63, the method comprising the step of applying a further voltage component in association with a plurality of said oppositely-directed voltage excursions.

77. (New) The method according to claim 64, the method comprising the step of applying a further voltage component in association with a plurality of said oppositely-directed voltage excursions.

78. (New) The method according to claim 66, the method comprising the step of applying a further voltage component in association with a plurality of said oppositely-directed voltage excursions.

79. (New) The method according to claim 69, the method comprising the step of applying a further voltage component in association with a plurality of said oppositely-directed voltage excursions.

80. (New) The method according to claim 70, wherein said further voltage component has a magnitude medial of said voltage excursions.

81. (New) The method according to claim 75, wherein said further voltage component has a magnitude medial of said voltage excursions.

82. (New) The method according to claim 80, wherein said further voltage component is a constant substantially zero volts.

83. (New) The method according to any of claim 70, wherein said step of checking includes checking the timing of said voltage excursions.

84. (New) The method according to any of claim 75, wherein said step of checking includes checking the timing of said voltage excursions.

85. (New) The method according to any of claim 80, wherein said step of checking includes checking the timing of said voltage excursions.

B5 86. (New) The method according to any of claim 82, wherein said step of checking includes checking the timing of said voltage excursions.

87. (New) The method according to claim 70, wherein said step of checking includes checking the interval before or after a first or second voltage excursion.

88. (New) The method according to claim 75, wherein said step of checking includes checking the interval before or after a first or second voltage excursion.

89. (New) The method according to claim 80, wherein said step of checking includes checking the interval before or after a first or second voltage excursion.

90. (New) The method according to claim 82, wherein said step of checking includes checking the interval before or after a first or second voltage excursion.

91. (New) The method according to claim 83, wherein said step of checking includes checking the interval before or after a first or second voltage excursion.

92. (New) The method according to claim 70, wherein said step of checking includes the step of checking the nominal mid-point zero-crossing of said voltage excursions.

93. (New) The method according to claim 75, wherein said step of checking includes the step of checking the nominal mid-point zero-crossing of said voltage excursions.

94. (New) The method according to claim 80, wherein said step of checking includes the step of checking the nominal mid-point zero-crossing of said voltage excursions.

95. (New) The method according to claim 82, wherein said step of checking includes the step of checking the nominal mid-point zero-crossing of said voltage excursions.

B<sup>5</sup> 96. (New) The method according to claim 83, wherein said step of checking includes the step of checking the nominal mid-point zero-crossing of said voltage excursions.

97. (New) The method according to claim 87, wherein said step of checking includes the step of checking the nominal mid-point zero-crossing of said voltage excursions.

98. (New) The method according to claim 70, wherein said step of checking includes the step of checking the total extents of said voltage excursions.

99. (New) The method according to claim 75, wherein said step of checking includes the step of checking the total extents of said voltage excursions.

100. (New) The method according to claim 80, wherein said step of checking includes the step of checking the total extents of said voltage excursions.

101. (New) The method according to claim 82, wherein said step of checking includes the step of checking the total extents of said voltage excursions.

102. (New) The method according to claim 83, wherein said step of checking includes the step of checking the total extents of said voltage excursions.

103. (New) The method according to claim 87, wherein said step of checking includes the step of checking the total extents of said voltage excursions.

104. (New) The method according to claim 92, wherein said step of checking includes the step of checking the total extents of said voltage excursions.

105. (New) The method according to claim 62, and comprising the step of time domain reflectometry to detect transmission line faults.

B5- 106. (New) A method of binary signalling between first and second equipments linked by a transmission line, the method comprising the step of applying to said transmission line a voltage signal comprising two successively oppositely-directed voltage excursions and an associated further voltage component; and integrating said voltage signal, thereby to extract a corresponding binary value.

107. (New) Method of binary signalling between first and second equipments linked by a transmission line, the method comprising the step of applying to said transmission line a voltage signal comprising successively oppositely-directed voltage excursions and a further voltage component in association with a plurality of said oppositely-directed voltage excursions; and integrating said voltage signal, thereby to extract corresponding successive binary values.

108. (New) The method according to claim 106, and wherein the step of integrating said voltage signal further comprises the step of passing said signal through an amplifier that is not fast enough.

109. (New) The method according to claim 107, and wherein the step of integrating said voltage signal further comprises the step of passing said signal through an amplifier that is not fast enough.



110. (New) The method according to claim 106, and further comprising the step of passing DC or AC power between said first and second equipments.

111. (New) The method according to claim 107, and further comprising the step of passing DC or AC power between said first and second equipments.

112. (New) The method according to claim 110, and comprising the step of passing said DC or AC power and said voltage signal through a transformer, thereby to extract said voltage signal.

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113. (New) The method according to claim 106, and comprising the step of varying the speed at which said voltage signal is applied to said transmission line.

114. (New) The method according to claim 107, and comprising the step of varying the speed at which said voltage signal is applied to said transmission line.

115. (New) The method according to claim 108, and comprising the step of varying the speed at which said voltage signal is applied to said transmission line.

116. (New) The method according to claim 110, and comprising the step of varying the speed at which said voltage signal is applied to said transmission line.

117. (New) The method according to claim 112, and comprising the step of varying the speed at which said voltage signal is applied to said transmission line.

118. (New) The method according to claim 106, wherein said voltage excursions are to substantially the same extent.

119. (New) The method according to claim 107, wherein said voltage excursions are to substantially the same extent.

120. (New) The method according to claim 106, wherein said voltage excursions are of opposite polarity.

121. (New) The method according to claim 107, wherein said voltage excursions are of opposite polarity.

122. (New) The method according to claim 108, wherein said voltage excursions are of opposite polarity.

123. (New) The method according to claim 110, wherein said voltage excursions are of opposite polarity.

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124. (New) The method according to claim 112, wherein said voltage excursions are of opposite polarity.

125. (New) The method according to claim 113, wherein said voltage excursions are of opposite polarity.

126. (New) The method according to claim 118, wherein said voltage excursions are of opposite polarity.

127. (New) The method according to claim 120, wherein said voltage excursions are symmetrical about nominally zero volts.

128. (New) The method according to claim 106, wherein said associated further voltage component has a magnitude medial of said voltage excursions.

129. (New) The method according to claim 107, wherein said associated further voltage component has a magnitude medial of said voltage excursions.

130. (New) The method according to claim 108, wherein said associated further voltage component has a magnitude medial of said voltage excursions.

131. (New) The method according to claim 110, wherein said associated further voltage component has a magnitude medial of said voltage excursions.

132. (New) The method according to claim 112, wherein said associated further voltage component has a magnitude medial of said voltage excursions.

133. (New) The method according to claim 113, wherein said associated further voltage component has a magnitude medial of said voltage excursions.

134. (New) The method according to claim 118, wherein said associated further voltage component has a magnitude medial of said voltage excursions.

135. (New) The method according to claim 120, wherein said associated further voltage component has a magnitude medial of said voltage excursions.

136. (New) The method according to claim 127, wherein said associated further voltage component has a magnitude medial of said voltage excursions.

137. (New) The method according to claim 128, wherein said associated further voltage component is a constant substantially zero volts.

138. (New) The method according to claim 106, and further comprising the step of emanating signals from at least one master unit to at least one of a plurality of signal reflective nodes having respective slave units connected thereto.

139. (New) The method according to claim 107, and further comprising the step of emanating signals from at least one master unit to at least one of a plurality of signal reflective nodes having respective slave units connected thereto.

140. (New) The method according to claim 138, and wherein said nodes are serially connected with said master unit, the method comprising the step of emanating a series

of signals from said master unit to select for communication or not respective slave units connected to successive nodes.

141. (New) The method according to claim 138, and wherein each node has a first connection and a second connection to a further node, the method comprising the step of emanating a signal element to a first connection of a node, thereby to instruct the passing of subsequent signal elements to said further node via said second connection.

142. (New) The method according to claim 138, and wherein each node has a first connection and a second connection to a further node, the method comprising the step of emanating a signal element to a first connection of a node, thereby to instruct the passing of subsequent signal elements to the respective slave unit.

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143. (New) The method according to claim 141, and wherein each node has a first connection and a second connection to a further node, the method comprising the step of emanating a signal element to a first connection of a node, thereby to instruct the passing of subsequent signal elements to the respective slave unit.

144. (New) The method according to claim 141, and wherein each node has a first connection and a second connection to a further node, the method comprising the step of emanating a signal element to a first connection of a node, thereby to instruct the passing of subsequent signal elements to the respective slave unit to cease.

145. (New) The method according to claim 138, and wherein said master unit and nodes are also connected to at least one router node having at least three connections, the method comprising the step of emanating signals from said master unit thereby to instruct the transfer of subsequent signal elements between first and second or first and third of said connections.

146. (New) The method according to claim 140, and wherein said master unit and nodes are also connected to at least one router node having at least three connections, the method comprising the step of emanating signals from said master unit thereby to instruct the

transfer of subsequent signal elements between first and second or first and third of said connections.

147. (New) The method according to claim 141, and wherein said master unit and nodes are also connected to at least one router node having at least three connections, the method comprising the step of emanating signals from said master unit thereby to instruct the transfer of subsequent signal elements between first and second or first and third of said connections.

148. (New) The method according to claim 142, and wherein said master unit and nodes are also connected to at least one router node having at least three connections, the method comprising the step of emanating signals from said master unit thereby to instruct the transfer of subsequent signal elements between first and second or first and third of said connections.

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149. (New) The method according to claim 144, and wherein said master unit and nodes are also connected to at least one router node having at least three connections, the method comprising the step of emanating signals from said master unit thereby to instruct the transfer of subsequent signal elements between first and second or first and third of said connections.

150. (New) The method according to claim 145, and further comprising the step of supplying electrical power to said router node for transfer to said slave units.

151. (New) The method according to claim 138, the method further comprising the step of connecting said master unit to either a first or second connection of a node or router node.

152. (New) The method according to claim 140, the method further comprising the step of connecting said master unit to either a first or second connection of a node or router node.

153. (New) The method according to claim 141, the method further comprising the step of connecting said master unit to either a first or second connection of a node or router node.

154. (New) The method according to claim 142, the method further comprising the step of connecting said master unit to either a first or second connection of a node or router node.

155. (New) The method according to claim 144, the method further comprising the step of connecting said master unit to either a first or second connection of a node or router node.

BS 156. (New) The method according to claim 145, the method further comprising the step of connecting said master unit to either a first or second connection of a node or router node.

157. (New) The method according to claim 150, the method further comprising the step of connecting said master unit to either a first or second connection of a node or router node.

158. (New) The method according to claim 151, the method further comprising the step of configuring one of said first and second connections for constant reflection whenever another of said connections is receiving signals from said master unit.

159. (New) The method according to claim 138, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect the equipment of and distance to nodes and/or router nodes.

160. (New) The method according to claim 140, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect the equipment of and distance to nodes and/or router nodes.

161. (New) The method according to claim 141, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect the equipment of and distance to nodes and/or router nodes.

162. (New) The method according to claim 142, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect the equipment of and distance to nodes and/or router nodes.

163. (New) The method according to claim 144, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect the equipment of and distance to nodes and/or router nodes.

164. (New) The method according to claim 145, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect the equipment of and distance to nodes and/or router nodes.

165. (New) The method according to claim 150, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect the equipment of and distance to nodes and/or router nodes.

166. (New) The method according to claim 151, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect the equipment of and distance to nodes and/or router nodes.

167. (New) The method according to claim 158, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect the equipment of and distance to nodes and/or router nodes.

168. (New) The method according to claim 142, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect wrong routers and/or transmission line faults.

169. (New) The method according to claim 144, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect wrong routers and/or transmission line faults.

170. (New) The method according to claim 145, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect wrong routers and/or transmission line faults.

171. (New) The method according to claim 150, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect wrong routers and/or transmission line faults.

172. (New) The method according to claim 151, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect wrong routers and/or transmission line faults.

173. (New) The method according to claim 158, the method further comprising the step of time domain reflectometry by said master unit(s), thereby to detect wrong routers and/or transmission line faults.

174. (New) The method according to claim 141, wherein said signal element is a relatively large signal component.

175. (New) The method according to claim 142, wherein said signal element is a relatively large signal component.

176. (New) The method according to claim 144, wherein said signal element is a relatively large signal component.

177. (New) The method according to claim 141, wherein said signal element is a strobe pulse.




178. (New) The method according to claim 142, wherein said signal element is a strobe pulse.

179. (New) The method according to claim 144, wherein said signal element is a strobe pulse.

180. (New) The method according to claim 55, wherein an unreflective state is used along with said reflections.

181. (New) The signalling system configured to operate in accordance with claim 106.

182. (New) The signalling system configured to operate in accordance with claim 107.

 183. (New) The signalling system according to claim 181, wherein coupling of a slave or router node to a transmission line implies a continuous conductive path therethrough along which DC or low frequency AC power can be passed along with signalling.

184. (New) The signalling system according to claim 181, including master circuitry for taking reflection components from received signals in full duplex communication mode, said circuitry affording transmission line termination at transductance that is reciprocal of transmission line impedance with direct feedback between output current and input voltage as a common resistance equating point.

185. (New) The signalling system according to claim 183, including master circuitry for taking reflection components from received signals in full duplex communication mode, said circuitry affording transmission line termination at transductance that is reciprocal of transmission line impedance with direct feedback between output current and input voltage as a common resistance equating point.

B5 186. (New) The signalling system according to claim 184, wherein fixed ratio capacitance means cooperates with inverting voltage amplifying means and affords a common capacitance point free of intrusions from output waveform parameters.

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